

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1 (currently amended): A system for neutralizing airborne pathogens, comprising:

A. a flow-through reaction chamber having:

1. a chamber air inlet at a first end of the reaction chamber to admit air contaminated with pathogens, and
2. a chamber air outlet at a second end of the reaction chamber to release decontaminated air, and defining between the air inlet and air outlet a passageway,

B. a supply of aqueous hydrogen peroxide connected to a conduit for introducing aqueous hydrogen peroxide into the reaction chamber, **and**

C. an ultraviolet light source for introducing UV light into the reaction chamber;  
**and**

**D. a porous matrix for providing additional surface area on which the neutralization of pathogens can occur.**

Claim 2 (original): The system as in claim 1, wherein the supply of aqueous hydrogen peroxide is a hydrogen peroxide generator connected to a water supply and a source of electricity.

Claim 3 (original): The system as in claim 1, wherein the supply of aqueous hydrogen peroxide is a reservoir of aqueous hydrogen peroxide.

Claim 4 (original): The system as in claim 1, wherein the conduit is a nozzle disposed inside the reaction chamber.

Claim 5 (canceled)

Claim 6 (currently amended): The system as in claim 15, wherein the porous matrix is metal foam.

Claim 7 (original): The system as in claim 6, wherein the metal is selected from the group comprising aluminum, copper, silver, and oxides thereof.

Claim 8 (original): The system as in claim 6, wherein the metal foam is aluminum foam.

Claim 9 (currently amended): The system as in claim 15, wherein the porous matrix is removable.

Claim 10 (original): The system as in claim 1, further comprising a microwave generator to introduce microwaves into the reaction chamber.

Claim 11 (original): The system as in claim 1, further comprising an ultrasonic wave generator to introduce ultrasonic waves into the reaction chamber.

Claim 12 (original): The system as in claim 1, further comprising an ozone supply for introducing ozone into the reaction chamber.

Claim 13 (original): The system as in claim 12, wherein the ozone supply is an ozone generator.

Claim 14 (original): The system as in claim 12, wherein the ozone supply is a reservoir that contains ozone.

Claim 15 (original): The system of claim 12, further comprising a mixing chamber for mixing ozone and aqueous hydrogen peroxide.

Claim 16 (original): The system of claim 1, wherein the reaction chamber further comprises a solid support.

Claim 17 (original): The system of claim 16, wherein the solid support comprises ozone removal catalysts.

Claim 18 (original): The system of claim 16, wherein the solid support comprises compounds that adsorb or neutralize pathogens.

Claim 19 (original): The system of claim 16, wherein the solid support comprises compounds that adsorb or neutralize chemical toxins.

Claim 20 (original): The system of claim 19, wherein the solid support comprises ozone removal catalysts.

Claim 21 (original): The system of claim 17, wherein the ozone removal catalyst is a member selected from the group comprising all-aluminum catalysts, a carbon supported metal oxide catalyst,  $\text{CuCl}_2$ -coated carbon fibers, carbon-iron aerosol particles, alumina, platinum, palladium, and nickel.

Claim 22 (original): The system of claim 13, wherein the ozone generator is a corona discharge generator.

Claim 23 (original): The system as in claim 1, configured for operation in a continuous mode.

Claim 24 (original): The system as in claim 1, configured to be activated upon demand.

Claim 25 (original): The system of claim 1, further comprising a fan to move air through the passageway.

Claim 26 (original): The system of claim 1, wherein an amount of hydrogen peroxide in the reaction chamber is controlled by sensors.

Claim 27 (original): The system as in claim 1, wherein the ultraviolet light source emits high intensity UV light.

Claim 28 (original): The system as in claim 27, wherein the ultraviolet light source emits UV light having a wavelength in a range from about 250 nanometers to about 300 nanometers.

Claim 29 (original): The system of claim 1, wherein a concentration of hydrogen peroxide in the aqueous hydrogen peroxide supply is from about 1% to about 50%.

Claim 30 (original): The system as in claim 1, wherein a concentration of hydrogen peroxide in the aqueous hydrogen peroxide supply is from about 1% to about 25%.

Claim 31 (withdrawn): A method of neutralizing airborne pathogens comprising:

1. introducing air contaminated with pathogens into a flow-through reaction chamber;
2. introducing aqueous hydrogen peroxide into the flow-through reaction chamber to form a mixture of contaminated air and aqueous hydrogen peroxide inside the reaction chamber;
3. irradiating the mixture with ultraviolet light thereby neutralizing the airborne pathogens to create decontaminated air; and
4. releasing the decontaminated air from the reaction chamber.

Claim 32 (withdrawn): The method of claim 31, further comprising the additional step before step 3 of introducing ozone into the reaction chamber forming a mixture of contaminated air, aqueous hydrogen peroxide and ozone.

Claim 33 (withdrawn): The method of claim 31, step 2 further comprising mixing the aqueous hydrogen peroxide with ozone before introducing the aqueous hydrogen peroxide to form a mixture of contaminated air, aqueous hydrogen peroxide and ozone.

Claim 34 (withdrawn): The method of claim 31, step 2 further comprising introducing the aqueous hydrogen peroxide into the reaction chamber through a nozzle disposed in the reaction chamber, to form at least one of a spray, mist or vapor.

Claim 35 (withdrawn): The method as in claim 31, step 2 further comprising maintaining a concentration of hydrogen peroxide in the flow through reaction chamber at a level in a range from about 1% to about 50%.

Claim 36 (withdrawn): The system as in claim 31, step 2 further comprising maintaining a concentration of hydrogen peroxide in the flow-through reaction chamber at a level in a range from about 1% to about 25%.

Claim 37 (withdrawn): The method as in claim 32, step 2 further comprising maintaining a concentration of ozone in the reaction chamber at a level in a range from about 0.01 ppm to about 100 ppm.

Claim 38 (withdrawn): A method of neutralizing airborne chemical toxins comprising:

1. introducing air contaminated with chemical toxins into a flow-through reaction chamber;
2. introducing aqueous hydrogen peroxide into the flow-through reaction chamber to form a mixture of contaminated air and aqueous hydrogen peroxide inside the reaction chamber;

3. irradiating the mixture with ultraviolet light thereby neutralizing the airborne chemical toxins to create decontaminated air; and
4. releasing the decontaminated air from the reaction chamber.

Claim 39 (withdrawn): The method of claim 38, further comprising the additional step before step 3 of introducing ozone into the reaction chamber to form a mixture of contaminated air, aqueous hydrogen peroxide and ozone.

Claim 40 (withdrawn): The method of claim 38, step 2 further comprising mixing the aqueous hydrogen peroxide with ozone before introducing the aqueous hydrogen peroxide to form a mixture of contaminated air, aqueous hydrogen peroxide and ozone.

Claim 41 (withdrawn): The method of claim 38, step 2 further comprising introducing the aqueous hydrogen peroxide into the reaction chamber through a nozzle to form at least one of a spray, mist or vapor.

Claim 42 (withdrawn): The method as in claim 38, step 2 further comprising maintaining a concentration of hydrogen peroxide in the flow through reaction chamber at a level in a range from about 1% to about 50%.

Claim 43 (withdrawn): The system as in claim 38, step 2 further comprising maintaining a concentration of hydrogen peroxide in the flow-through reaction chamber at a level in a range from about 1% to about 25%.

Claim 44 (withdrawn): The method as in claim 32 or claim 33, step 2 further comprising maintaining a concentration of ozone in the reaction chamber at a level in a range from about 0.01 ppm to about 1000 ppm.

Claim 45 (withdrawn): The method as in claim 32 or claim 33, step 2 further comprising maintaining a concentration of ozone in the reaction chamber at a level in a range from about 0.01 ppm to about 1000 ppm.

Claim 46 (withdrawn): A system for neutralizing airborne pathogens and chemical toxins, comprising:

A. a flow-through reaction chamber having:

1. a chamber air inlet at a first end of the reaction chamber to admit air contaminated with pathogens, and

3. a chamber air outlet at a second end of the reaction chamber to release decontaminated air, and defining between the air inlet and air outlet a passageway,

B. a supply of aqueous hydrogen peroxide connected to a conduit for introducing aqueous hydrogen peroxide into the reaction chamber, and

C. a means for converting aqueous hydrogen peroxide to hydroxyl radicals.

Claim 47 (withdrawn): The system as in claim 46, wherein the means for converting aqueous hydrogen peroxide into hydroxyl radicals is heat.

Claim 48 (withdrawn): The system as in claim 46, wherein the means for converting aqueous hydrogen peroxide into hydroxyl radicals is electricity.